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CHINA: REACTIONS TO US STRATEGIC DEFENSE INITIATIVE 25X1

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Comment:

25X1 a growing Chinese concern over the effect of SDI on China's nuclear deterrent. The Chinese currently rely on a small nuclear retaliation capability, probably sufficient to penetrate Moscow's ABM system or to strike other undefended soft targets within the USSR. 25X1

The Chinese believe that the US SDI will motivate the Soviets to purse a similar objective. A Soviet SDI with even moderate capabilities against a full US nuclear strike would place the retaliatory potential of Chinese ballistic missiles in jeopardy. 25X1

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CHINA/US: UNDERWATER REMOTELY OPERATED VEHICLE SYSTEM PURCHASED FROM US FIRM (

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China will purchase a one-million-dollar remotely operated vehicle (ROV) system. 25X1

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the equipment will be used for dam inspection and maintenance. requested that the ROV be able to operate in high wind and waves, work at depths of 200 meters, and be equipped with side-scan sonar. In addition to meeting these specifications, however, the US-supplied ROV will be capable of operations down to 400 meters and will include a low-light television camera. 25X1

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Comment:

Although the ROV could be used for dam upkeep, we believe the Chinese probably have additional purposes in mind. High-wave conditions and a working depth of 200 meters suggest that the continental shelf is a likely area of application. The Chinese have undertaken a large effort to map their continental shelf and to survey shelf resources, and have sought US participation in their undersea mapping program. The ROV also is well suited for military use. The side-scan sonar and camera could be used to locate, map, and evaluate objects of military concern, such as mines, cables, and debris. The sonar, if capable of high resolution, could provide centimeter-scale detail of the sea floor, with a swath width of about 100 meters. Earlier, the Chinese had attempted to acquire a US ROV capable of operating at a depth of 6,000 meters 1985).

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JAPAN: CERAMIC TURBOCHARGER MARKETING DELAYED 25X1

the Japanese firm Mitsubishi has delayed marketing its ceramic turbochargers until 1986, apparently because too many test turbochargers were failing. The firm claims the failures are due to small rust particles in engine exhaust impacting the silicon nitride rotors and causing them to shatter. 25X1

Comment:

Mitsubishi probably has oversimplified its turbocharger problem by blaming the delay simply on rust particles. We believe internal defects and surface erosion are contributing factors to the rotor breakage. The firm may have no direct evidence correlating rotor shattering with the impact of rust particles, and may have reached this conclusion only from contrasts in performance between engines used in current field tests and earlier laboratory tests. Few automotive rust particles are large and dense enough to shatter rotors not weakened previously by other causes. All ceramic rotor manufacturers, including Mitsubishi's three potential suppliers--Kyocera, NGK Insulator, and Asahi Glass--have been plagued with sizable internal pores on the order of tens of microns in routinely fabricated rotors. Sub-millimeter-size rust or carbon particles in exhaust gases normally erode metal blades and rotors in all turbines, and may initiate cracks that eventually cause breakage in ceramic rotors. 25X1

Mitsubishi seems to be taking the rust-particle problem in stride, without the reaction that likely would accompany a comparable problem in a West European or US firm. The Japanese often push early commercialization of products to quickly sort out problems. Mitsubishi has followed this tactic with ceramic turbochargers. The company announced plans in late 1983 to commercialize ceramic turbochargers in 1984, and presumably would not have done so had they anticipated a severe rust particle problem. Mitsubishi, however, still has a good chance being the first to commercialize ceramic turbochargers even with this delay and possibly others in the future. 25X1

The delay, nevertheless, has wider ramifications, as manufacturing defects are part of the problem. We previously identified the ceramic turbocharger as a bellwether of Japanese efforts to develop ceramics for diesel engines.

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On a broader scale, delays in Japanese efforts to exploit advanced ceramics in engines are implied. Despite setbacks, the Japanese continue to be strongly committed to the use of ceramics in engines. They also are working on other monolithic and reinforced ceramics for additional engine applications.

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